DOCUMENT RESUME

ED 119 589 HE 007 330

AUTHOR Atelsek, Frank J.; Gomberg, Irene L.
TITLE Faculty Research: Level of Activity and Choice of Area. Higher Education Panel Reports No. 29.
INSTITUTION American Council on Education, Washington, D.C. Higher Education Panel.
SPONS AGENCY National Institutes of Health (DHEW), Bethesda, Md.; National Science Foundation, Washington, D.C.; Office of Education (DHEW), Washington, D.C.
PUB DATE Jan 76
NOTE 38p.
AVAILABLE FROM American Council on Education, One Dupont Circle, Suite 630, Washington, D.C. 20036 (free)

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage
DESCRIPTORS *College Faculty; Engineering; *Financial Support; *Higher Education; Questionnaires; *Research Needs; Sciences; *Scientific Research; Surveys; Tables (Data); Working Hours

ABSTRACT

This survey on faculty involvement in research and the ability of faculty investigators to obtain support in research areas of their own choosing elicited information from doctorate-level departments in each of 16 selected science and engineering fields on: (1) the number of full-time doctorate faculty and the proportion of time they spend on research; (2) the number of faculty investigators who had external, separately budgeted research support; (3) the number of faculty investigators who received external support primarily for research outside their preferred areas; and (4) the factors influencing faculty investigators in their selection of externally sponsored research activities in nonpreferred areas. The sample was limited to institutions that granted doctorates in at least one science or engineering field in 1970-71 and that received $1 million or more from the Federal Government for research and development in FY 1974. Tables give a breakdown by field. Appendices provide the survey instrument. (Author/KE)

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Faculty Research: Level of Activity and Choice of Area

Frank J. Atelsek and Irene L. Gomberg

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HE 007 330

HIGHER EDUCATION PANEL REPORTS, NUMBER 29
AMERICAN COUNCIL ON EDUCATION

JANUARY
1976

2

A Survey Funded by the National Science Foundation, the U. S. Office of Education, and the National Institutes of Health.

AMERICAN COUNCIL ON EDUCATION

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The Higher Education Panel's surveys on behalf of the Federal Government are conducted under grant support provided jointly by the National Science Foundation, the National Institutes of Health, and the U. S. Office of Education (NSF Grant SRS-7517251).

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Acknowledgements

The issues of research support and choice of research areas, first raised in a National Science Foundation survey conducted in 1974 by the Division of Science Resources Studies, gave the impetus for this survey. Charles H. Dickens and Felix H. I. Lindsay of the Science Education Studies Group in that Division were most helpful with several aspects of the present study.

As with all Panel surveys conducted for federal government agencies, this survey benefited from the guidance offered by members of the Federal Advisory Board for HEP and its Technical Advisory Committee.

Nabil Issa was responsible for processing the data. Elaine Chamberlain organized the survey follow-up and typed the report.

We wish in particular to thank the department heads who responded and our Panel representatives at the institutions who administered the survey.

Highlights

Level of Research Activity

- More than four-fifths of the full-time doctorate faculty in doctorate-level science and engineering departments spent at least 20 percent of their time in research during 1974-75. This proportion varied widely by field, ranging from over 95 percent of the faculty in biochemistry to 72 percent of the faculty in mining and mineral engineering.

- Overall, for the 1,149 responding departments, about 38 percent of the faculty spent over half their time in research. The comparable figure for the 241 departments rated "distinguished" and "strong" in the Roose-Andersen study was 54 percent.

Extent of External Research Support

- Among faculty investigators (those spending at least 20 percent of their time in research), 62 percent had external, separately budgeted research support; in departments rated "distinguished" and "strong", 77 percent had external research support.

- In 40 percent of all departments, and in 61 percent of the departments rated "distinguished" and "strong", at least three-fourths of all faculty investigators had external research support.

- In four fields a majority of faculty investigators did not have external research support: economics (61 percent), mathematics (57 percent), psychology (56 percent), and sociology (55 percent).

Supported Research Outside Preferred Areas

- Nearly one-tenth of the externally supported faculty investigators were being supported primarily for research in an area different from their preferred area (i.e., the research area a faculty member would choose to work in, if support were available). In botany, sociology, electrical engineering, and economics that proportion exceeded 15 percent.

- In departments rated "distinguished" and "strong", fewer than 5 percent of the externally supported faculty investigators had their primary support for research in nonpreferred areas. For botany and economics departments, however, that proportion was over 12 percent.

Relationship Between Preferred and Supported Research Areas

- Of the externally supported faculty investigators receiving primary support for research outside their preferred areas, about 8 percent were in a wholly different field, about 40 percent were in their preferred field but in a different subfield, and about 51 percent were in their preferred subfield but in a different specialty.

- In departments rated "distinguished" and "strong", about 5 percent of the externally supported faculty investigators working in nonpreferred areas got their primary support for research in a different field, about 36 percent in a different subfield, and 59 percent in a different specialty.

Factors Influencing Choice of Research Area

- Department heads reported that, in about three-fifths of the cases, the faculty investigators with external research support primarily in nonpreferred areas selected those research areas because of their belief that they offered a better chance for support.

Background

Faculty involvement in research and the ability of faculty investigators[1] to obtain support in research areas of their own choosing are important to the health of scientific research. Thus, there was understandable concern when a 1974 National Science Foundation survey of faculty research activity found that, in only 55 percent of the doctorate-level science and engineering departments surveyed were faculty investigators generally able to obtain support in the research areas of their choice.[2] Recognizing the need for further insight into the situation, the Foundation asked the American Council on Education to conduct the present survey through its Higher Education Panel.

The survey instrument was designed to elicit information from doctorate-level departments in each of 16 selected science and engineering fields on:

(1) the number of full-time doctorate faculty and the proportion of time they spent on research,

(2) the number of faculty investigators who had external, separately budgeted research support,

(3) the number of faculty investigators who received external support primarily for research outside their preferred areas, and

(4) the factors influencing faculty investigators in their selection of externally sponsored research activities in nonpreferred areas.

Methods Summary

The data for this report were collected as part of the ongoing research program of the Higher Education Panel at the American Council on Education. Established in 1971 for the purpose of conducting quick-response surveys on

[1] Investigator is used in this report to indicate a faculty member spending at least 20 percent of his/her time in research.

[2] National Science Foundation, Young and Senior Science and Engineering Faculty, 1974: Support, Research Participation and Tenure (Washington: U.S. Government Printing Office), 1975.

topics of general policy interest to the higher education community and government agencies, HEP is based on a network of campus representatives at 643 institutions broadly representative of all colleges and universities in the United States. For any given survey the entire Panel, or a subset, may be used.

For this survey, the sample was limited to institutions that granted doctorates in at least one science or engineering field in 1970-71 and that received $1 million or more from the federal government for research and development in FY 1974[3]. Of the 219 Ph.D.-granting institutions in the Higher Education Panel, 145 met both of these criteria, accounting for 85 percent of the nearly 18,500 science and engineering doctorates awarded in 1970-71. (See Appendix C for the list of sampled institutions.)

Unlike most HEP surveys, the present inquiry was directed at selected departments within the institutions rather than at the institutions themselves. The respondents were department heads in the following science and engineering fields:

Biochemistry	Chemistry	Mathematics	Physiology
Biology	Economics	Microbiology	Psychology
Botany	Electrical Engineering	Mining and Mineral Engineering	Sociology
Chemical Engineering	Geology	Physics	Zoology

To determine the number of departments eligible for the survey, Panel representatives were asked to identify the relevant doctorate-level departments at their institutions (as listed above). One hundred and thirty-seven institutions (94 percent) provided this information. Departmental data for

[3]Based on reports to the National Science Foundation derived from the government-wide data system originally established under the auspices of the Committee on Academic Science and Engineering (CASE). These institutions were selected because they have substantial research activity.

the remaining eight institutions were obtained from the National Science Foundation records compiled from the related survey conducted one year earlier. Thus the sample for the present survey comprised an estimated 1,385 eligible departments at 145 colleges and universities.

By the deadline for questionnaire returns, usable responses had been received from 1,149 departments at 138 institutions, for a departmental response rate of 83 percent and an institutional response rate of 95 percent. (For a more detailed discussion of institutional and departmental response to the survey, see Appendix B.) The data are presented separately by field for (1) all responding departments and (2) departments whose faculty were rated "distinguished" and "strong" in A Rating of Graduate Programs (Roose and Andersen, 1970)[4].

Results

Level of Research Activity

The 1,149 departments responding to the survey included 23,720 full-time doctorate faculty. More than four-fifths of these faculty members

[4] Ratings were provided by 4,000 faculty members in 37 disciplines at 131 major institutions. Respondents assessed as many of the major institutions offering doctoral study in their disciplines as they felt competent to rate. They were asked to select from a given set of terms the one term which best described their judgment of the quality of graduate faculty, the effectiveness of the doctoral program, and the degree of change seen in the relative position of departments. Average scores were calculated for each department at each institution.

In the ratings of graduate faculty, the highest-scoring departments were categorized as "distinguished". The next level was "strong", followed by "good", "adequate", "marginal", and "not sufficient for doctoral training". The first two designations ("distinguished" and "strong") were combined for separate tabulation. Kenneth D. Roose and Charles J. Andersen, A Rating of Graduate Programs (Washington: American Council on Education), 1970.

spent at least 20 percent of their time in research, and almost two-fifths devoted 50 percent or more to research activities (Table 1A). In four fields -- biochemistry, physiology, physics, and microbiology -- more than half of the faculty were spending at least 50 percent of their time in research.

Doctorate faculty in the 241 responding departments rated as "distinguished" and "strong" in the Roose-Andersen study were even more heavily involved in research (Table 1B)[5]. Nine out of ten faculty members spent at least 20 percent of their time in research, and more than half spent over 50 percent of their time in research. Both overall and for each of the 14 fields[6] considered separately, the doctorate faculties in the "distinguished" and "strong" departments devoted a greater proportion of their time to research than did their colleagues in other departments surveyed. It might also be noted that the rated departments averaged 27 full-time doctorate faculty compared with an average of 21 for all departments. The direction of this average difference in size held in each of the surveyed fields.

Extent of External Research Support

Among the full-time doctorate faculty spending more than 20 percent of their time in research, over three-fifths had external, separately budgeted research support (Table 2A). In departments rated "distinguished" and "strong", three-fourths of the faculty had such support (Table 2B).

In all but four of the 16 fields, a majority of the faculty investigators had external separately budgeted research support. The exceptions were economics (39 percent), mathematics (43 percent), psychology (44 percent), and sociology (45 percent).

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[5] See Methods Summary for a brief review of the basis used for ratings.

[6] The Roose-Andersen study did not rate departments of biology as defined in this survey or departments of mining and mineral engineering.

Overall, in two-fifths of the departments, 75 percent or more of the faculty investigators had external research support (Table 3A). There were substantial differences by field, however, ranging from just under nine-tenths of the departments of mining and mineral engineering to approximately one-tenth of those in economics and psychology.

About three-fifths of the 241 departments rated "distinguished" and "strong" reported that 75 percent or more of their investigators had external research support (Table 3B). In one field -- biochemistry -- all responding departments indicated this level of involvement; and in four other fields -- chemistry, microbiology, physics, and physiology -- at least four-fifths of the departments reported this degree of faculty participation. In only seven of the 241 departments did fewer than 25 percent of the faculty investigators have external research support.

Supported Research Outside Preferred Areas

Of the more than 12,000 faculty investigators receiving external research support, 9 percent got that support for research outside their preferred area (i.e., the research area a faculty member would choose to work in, if support were available) (Table 2A). Since these are the first data available on this subject, it is not possible to say quantitatively what the situation was in the past. Comments of some department heads suggest, however, that this phenomenon is relatively recent. Furthermore, as is noted below, this situation was reported less often by the "distinguished" and "strong" departments than by other departments.

In four fields, -- botany, economics, electrical engineering and sociology -- at least 15 percent of the externally supported faculty investigators received that support for work in other than their preferred areas of research.

The proportion of faculty with external research support within a given field bears no clear relationship to the proportion working in other than preferred research areas. For example, mining and mineral engineering had by far the largest proportion of externally supported faculty (89 percent) but also had a high proportion of externally supported faculty working in areas different from their preferred area. On the other hand, the three social science fields surveyed (economics, psychology, and sociology) had the lowest proportions of externally supported faculty (each less than 45 percent), but in two of these fields (economics and sociology) the proportions receiving support for work outside their preferred research areas were among the highest reported (16 and 17 percent, respectively).

In the departments rated "distinguished" and "strong", all but 5 percent of the faculty investigators received support for work in their preferred areas of research (Table 28). Within the 14 rated fields, however, these proportions varied considerably, ranging from 2 percent or less in physiology, physics, and psychology to more than 12 percent in botany and economics. Nevertheless, the "distinguished" and "strong" departments in all fields had consistently larger proportions of faculty investigators with external support, and consistently smaller proportions receiving support in other than their preferred areas of research, than did other responding departments.

Almost two-thirds (64 percent) of the department heads reported that none of their faculty investigators had external research support primarily in nonpreferred areas (Table 4A). This was particularly true in departments of biochemistry and mathematics (85 percent and 87 percent, respectively).

On the other hand, the heads of almost one-fourth of the departments reported that at least 20 percent of those faculty investigators had external support primarily for research in nonpreferred areas. This situation was most apparent in botany and electrical engineering, where it was reported by approximately 40 percent of the departments.

In the "distinguished" and "strong" departments, nearly three-fourths of the departments reported that none of their faculty investigators were primarily supported for research in nonpreferred areas (Table 4B). There were variations by field, however, with at least one-fifth of the departments of botany, economics, and geology reporting that 20 percent or more of their faculty investigators were receiving external support primarily in nonpreferred research areas.

Relationship Between Preferred and Supported Research Areas

To obtain additional information about research conducted in other than preferred areas, the survey included an inquiry about the relationship between investigators' supported research areas and their preferred research areas. Department heads were asked to classify their faculty investigators with external support into three groups: those with support primarily in fields different from their preferred fields; those in different subfields, but within their preferred fields; and, least removed, those in different specialties within their respective subfields (see the last page of questionnaire in Appendix A for illustrations of these distinctions). The results are shown in Table 5.

Of the 1,078 faculty investigators conducting research outside their preferred areas, fewer than one in ten was in a different field altogether; four out of ten were in their preferred fields but doing research in

nonpreferred subfields; and five out of ten were in their preferred subfields, but doing research in nonpreferred specialties. These proportions varied considerably by field. The chart below (abstracted from Table 5) shows, for the three relationships, the fields having the greatest proportions of faculty investigators with research support primarily in nonpreferred areas:

	Relationship of Supported to Preferred Research Area		
	Different Field	Different Subfield	Different Specialty
All Departments	8%	40%	51%
	Mathematics 31% Physiology 19% Biochemistry 17%	Mining & Mineral Engineering 71% Chemical Engineering 57% Sociology 51%	Microbiology 86% Zoology 79% Biology 64%
"Distinguished" and "Strong" Departments	5%	36%	59%
	Mathematics 29% Botany 13% Sociology 11%	Sociology 67% Chemical Engineering Geology Mathematics Psychology 50%	Physiology Zoology 100% Microbiology 93%

Factors Influencing Choice of Research Area

To identify the principal reasons for faculty involvement in nonpreferred areas of research, department heads were asked to rank the factors they believed most influenced the selection of research areas by investigators in their respective departments. Separate lists of factors were requested for the faculty investigators engaged in different specialties, in different subfields, and in different fields.

Overall, according to department heads, nearly three-fifths (58 percent) of the 1,078 faculty investigators selected research areas they believed

had a better chance for support (Table 6). Furthermore, this factor was considered to be the most influential in each of the three categories of relationship between supported and preferred research areas.

Other factors cited by a number of department heads as important influences on faculty investigators who obtained external support for research in nonpreferred areas were: (1) the funding organization suggested the area of research to the prospective researcher, (2) the funding organization emphasized applied research, and (3) the faculty member was serving as a co-investigator on another faculty member's project. Each of the above factors was attributed as the primary influence for 13 percent of the faculty investigators.

In only a small fraction (1 percent) of the cases was selection of nonpreferred research areas attributed to the lack of facilities or equipment or to administrative decisions within the investigator's institution. Within each of the 16 fields, the factor most often cited as predominant in influencing faculty to select a nonpreferred research area was the belief that a better chance for support existed in that research area (Tables 7 and 8). The few exceptions are shown in the chart below, where N refers to the number of doctorate faculty.

Predominant Factor	Degree of Relationship to Preferred Research Area		
	Different Field	Different Subfield	Different Specialty
Funding organization suggested area of research to prospective researcher	Biochemistry(N=4) (75%)	Economics(N=40) (35%)	Mining & Mineral Engineering(N=4) (50%)
Funding organization emphasized applied research		Botany(N=15) (53%) Sociology(N=42) (36%)	Biochemistry(N=10) (70%)
Faculty member was co-investigator on another faculty member's project	Sociology(N=7) (57%)		

Tables

Table 1

Full-Time Doctorate Faculty, by Proportion of Time Spent in Research:
(In Percentages)

A. All Departments

Field	Number of Departments	Total Faculty		Proportion of Time Spent in Research				
		Number	Percent	Less than 20%	20% or More	20-33%	34-50%	More than 50%
Biochemistry	66	850	100.0	4.7	95.3	4.9	21.3	69.1
Biology	72	1,813	100.0	15.1	84.9	20.8	26.8	37.3
Botany	35	555	100.0	16.9	83.1	26.3	21.4	35.3
Chemical Engineering	68	679	100.0	19.3	80.7	23.0	29.5	28.3
Chemistry	114	2,638	100.0	14.3	85.7	13.8	26.4	45.5
Economics	80	1,822	100.0	21.6	78.4	28.3	24.5	25.5
Electrical Engineering	72	1,371	100.0	26.7	73.3	24.9	20.0	28.4
Geology	66	930	100.0	13.0	87.0	22.4	35.3	[illegible]
Mathematics	102	3,414	100.0	20.0	80.0	25.0	26.8	28.2
Microbiology	73	835	100.0	9.5	90.5	12.1	26.3	52.1
Mining & Mineral Engineering	15	192	100.0	27.6	72.4	23.4	19.3	29.7
Physics	106	2,923	100.0	8.9	91.1	10.9	20.4	59.8
Physiology	67	1,022	100.0	6.8	93.2	7.7	20.1	65.5
Psychology	100	2,483	100.0	16.3	83.7	26.7	33.0	24.0
Sociology	77	1,418	100.0	22.4	77.6	24.0	25.8	27.7
Zoology	36	775	100.0	17.5	82.5	22.1	39.7	20.6
All Fields	1,149	23,720	100.0	16.0	84.0	19.9	26.1	37.9

B. Departments Rated "Distinguished" and "Strong" in the Roose-Andersen Study

Field	Number of Departments	Total Faculty		Proportion of Time Spent in Research				
		Number	Percent	Less than 20%	20% or More	20-33%	34-50%	More than 50%
Biochemistry	16	268	100.0	1.9	98.1	1.9	16.0	80.2
Botany	11	211	100.0	10.9	89.1	31.8	21.3	36.0
Chemical Engineering	13	172	100.0	11.6	88.4	10.5	32.6	45.3
Chemistry	29	853	100.0	7.5	92.5	10.2	21.8	60.5
Economics	12	334	100.0	7.8	92.2	14.1	29.0	49.1
Electrical Engineering	14	450	100.0	18.4	81.6	20.0	16.7	44.9
Geology	15	288	100.0	7.3	92.7	17.4	35.1	40.3
Mathematics	21	922	100.0	11.1	88.9	15.5	28.1	45.3
Microbiology	17	249	100.0	8.4	51.6	12.0	23.3	56.2
Physics	23	1,062	100.0	3.8	96.2	5.6	12.3	78.3
Physiology	20	380	100.0	4.5	95.5	1.8	13.9	79.7
Psychology	23	714	100.0	7.6	92.4	16.8	42.9	32.8
Sociology	16	341	100.0	14.7	85.3	14.1	22.3	49.0
Zoology	11	281	100.0	8.2	91.8	13.9	53.4	24.6
All Fields[a]	241	6,525	100.0	8.4	91.6	12.4	25.1	54.1

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

Table 2

Full-Time Doctorate Faculty Spending 20 Percent or More of Time in Research, Those With External Support, And Those In Areas Different From Preferred Research Areas:

A. All Departments

Field	Number of Departments	Faculty Spending 20% or More of Time in Research				
		Total Number	With External Support			
			Number	Percent of Column (3)	Primarily In Area Different From Preferred Area	
					Number	Percent of Column (4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Biochemistry	66	810	650	80.2	23	3.5
Biology	72	1,539	1,049	68.2	100	9.5
Botany	35	461	294	63.8	51	17.3
Chemical Engineering	68	548	438	79.9	53	12.1
Chemistry	114	2,261	1,682	74.4	152	9.0
Economics	80	1,428	558	39.1	89	15.9
Electrical Engineering	72	1,005	739	73.5	121	16.4
Geology	66	809	566	70.0	64	11.3
Mathematics	102	2,730	1,168	42.8	35	3.0
Microbiology	73	756	603	79.8	50	8.3
Mining & Mineral Engineering	15	139	123	88.5	14	11.4
Physics	106	2,664	1,894	71.1	89	4.7
Physiology	67	953	745	78.2	36	4.8
Psychology	100	2,078	920	44.3	76	8.3
Sociology	77	1,100	492	44.7	83	16.9
Zoology	36	639	390	61.0	42	10.8
All Fields	1,149	19,920	12,311	61.8	1,078	8.8

B. Departments Rated "Distinguished" and "Strong" In Roose-Andersen Study

Field	Number of Departments	Faculty Spending 20% or More of Time in Research				
		Total Number	With External Support			
			Number	Percent of Column(3)	Primarily In Area Different From Preferred Area	
					Number	Percent of Column(4)
(1)	(2)	(3)	(4)	(5)		
Biochemistry	16	263	256	97.3	8	3.1
Botany	11	188	127	67.6	16	12.6
Chemical Engineering	13	152	131	86.2	10	7.6
Chemistry	29	789	675	85.6	45	6.7
Economics	12	308	169	54.9	21	12.4
Electrical Engineering	14	367	276	75.2	26	9.4
Geology	15	267	193	72.3	10	5.2
Mathematics	21	820	596	72.7	14	2.3
Microbiology	17	228	197	86.4	15	7.6
Physics	23	1,022	897	87.8	15	1.7
Physiology	20	363	317	87.3	2	.6
Psychology	23	660	394	59.7	8	2.0
Sociology	16	291	177	60.8	9	5.1
Zoology	11	258	177	68.6	6	3.4
All Fields[a]	241	5,976	4,582	76.6	205	4.5

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

Table 3

Extent of External, Separately Budgeted Research Support, by Percentage of Doctorate Faculty in the Department Who Spend 20 Percent or More Time in Research:

A. All Departments

Field	Departments		Departments in Which External Support was Received by:							
			Less than 25% of Faculty		25 - 49% of Faculty		50 - 74% of Faculty		75% or More of Faculty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Biochemistry	66	100.0	3	4.5	7	10.6	11	16.7	45	68.2
Biology	72	100.0	5	6.9	13	18.1	24	33.3	30	41.7
Botany	35	100.0	2	5.7	7	20.0	15	42.9	11	31.4
Chemical Engineering	68	100.0	2	2.9	5	7.4	15	22.1	46	67.6
Chemistry	114	100.0	1	.9	13	11.4	47	41.2	53	46.5
Economics	80	100.0	24	30.0	31	38.8	16	20.0	9	11.3
Electrical Engineering	72	100.0	4	5.6	8	11.1	17	23.6	43	59.7
Geology	66	100.0	4	6.1	9	13.6	26	39.4	27	40.9
Mathematics	102	100.0	44	43.1	23	22.5	16	15.7	19	18.6
Microbiology	73	100.0	5	6.8	3	4.1	17	23.3	48	65.8
Mining & Mineral Engineering	15	100.0	0	0	0	0	2	13.3	13	86.7
Physics	106	100.0	9	8.5	20	18.9	33	31.1	44	41.5
Physiology	67	100.0	1	1.5	6	9.0	21	31.3	39	58.2
Psychology	100	100.0	26	26.0	39	39.0	25	25.0	10	10.0
Sociology	77	100.0	19	24.7	28	36.4	14	18.2	16	20.8
Zoology	36	100.0	2	5.6	6	16.7	18	50.0	10	27.8
All Fields	1,149	100.0	151	13.1	218	19.0	317	27.6	463	40.3

B. Departments Rated "Distinguished" and "Strong" in Roose-Andersen Study

Field	Departments		Departments in Which External Support was Received by:							
			Less than 25% of Faculty		25 - 49% of Faculty		50 - 74% of Faculty		75% or More of Faculty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Biochemistry	16	100.0	0	0	0	0	0	0	16	100.0
Botany	11	100.0	0	0	3	27.3	3	27.3	5	45.5
Chemical Engineering	13	100.0	0	0	0	0	3	23.1	10	76.9
Chemistry	29	100.0	0	0	0	0	5	17.2	24	82.8
Economics	12	100.0	1	8.3	6	50.0	4	33.3	1	8.3
Electrical Engineering	14	100.0	2	14.3	0	0	3	21.4	9	64.3
Geology	15	100.0	1	6.7	1	6.7	5	33.3	8	53.3
Mathematics	21	100.0	0	0	2	9.5	7	33.3	12	57.1
Microbiology	17	100.0	0	0	0	0	3	17.6	14	82.4
Physics	23	100.0	1	4.3	0	0	3	13.0	19	82.6
Physiology	20	100.0	0	0	0	0	4	20.0	16	80.0
Psychology	23	100.0	1	4.3	7	30.4	9	39.1	6	26.1
Sociology	16	100.0	1	6.3	6	37.5	5	31.3	4	25.0
Zoology	11	100.0	0	0	1	9.1	7	63.6	3	27.3
All Fields[a]	241	100.0	7	2.9	26	10.8	61	25.3	147	61.0

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

Table 4

Distribution of Departments with Doctorate Faculty Conducting Research in Areas Different from Preferred Areas, by Percentage of Faculty Receiving External Support in Nonpreferred Areas:

A. All Departments

Field	Departments		Departments In Which Research was Conducted in Areas Different From Preferred Areas by:							
			None of Faculty		1-9% of Faculty		10-19% of Faculty		20% or More of Faculty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Biochemistry	66	100.0	56	84.8	1	1.5	4	6.1	5	7.6
Biology	72	100.0	43	57.9	7	9.7	4	5.6	18	25.0
Botany	35	100.0	18	51.4	2	5.7	1	2.9	14	40.0
Chemical Engineering	68	100.0	40	58.8	0	0	5	7.4	23	33.8
Chemistry	114	100.0	57	50.0	10	8.8	19	16.7	28	24.6
Economics	80	100.0	49	61.3	1	1.3	4	5.0	26	32.5
Electrical Engineering	72	100.0	32	44.4	2	2.8	10	13.9	28	38.9
Geology	66	100.0	37	56.1	3	4.5	3	4.5	23	34.8
Mathematics	102	100.0	89	87.3	2	2.0	2	2.0	9	8.8
Microbiology	73	100.0	46	63.0	8	11.0	4	5.5	15	20.5
Mining & Mineral Engineering	15	100.0	9	60.0	0	0	1	6.7	5	33.3
Physics	106	100.0	71	67.0	9	8.5	7	6.6	19	17.9
Physiology	67	100.0	52	77.6	1	1.5	8	11.9	6	9.0
Psychology	100	100.0	65	65.0	6	6.0	5	5.0	24	24.0
Sociology	77	100.0	49	63.6	1	1.3	4	5.2	23	29.9
Zoology	36	100.0	22	61.1	2	5.6	4	11.1	8	22.2
All Fields	1,149	100.0	735	64.0	55	4.8	85	7.4	274	23.8

B. Departments Rated "Distinguished" and "Strong" in Roose-Andersen Study

Field	Departments		Departments in Which Research was Conducted in Areas Different From Preferred Areas by:							
			None of Faculty		1-9% of Faculty		10-19% of Faculty		20% or More of Faculty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Biochemistry	16	100.0	14	87.5	1	6.3	0	0	1	6.3
Botany	11	100.0	8	72.7	0	0	0	0	3	27.3
Chemical Engineering	13	100.0	9	69.2	0	0	2	15.4	2	15.4
Chemistry	29	100.0	17	58.6	5	17.2	2	6.9	5	17.2
Economics	12	100.0	6	50.0	1	8.3	2	16.7	3	25.0
Electrical Engineering	14	100.0	7	50.0	2	14.3	3	21.4	2	14.3
Geology	15	100.0	10	66.7	1	6.7	1	6.7	3	20.0
Mathematics	21	100.0	19	90.5	1	4.8	0	0	1	4.8
Microbiology	17	100.0	11	64.7	4	23.5	0	0	2	11.8
Physics	23	100.0	16	69.6	4	17.4	3	13.0	0	0
Physiology	20	100.0	19	95.0	0	0	1	5.0	0	0
Psychology	23	100.0	19	82.6	2	8.7	0	0	2	8.7
Sociology	16	100.0	13	81.3	1	6.3	0	0	2	12.5
Zoology	11	100.0	9	81.8	0	0	1	9.1	1	9.1
All Fields[a]	241	100.0	177	73.4	22	9.1	15	6.2	27	11.2

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

Table 5

Estimated Number of Faculty With External Support Primarily in Area Different from Preferred Area of Research:

A. All Departments

Field	Number of Departments: With Externally Supported Faculty Investigators[a]	Number of Departments: With Externally Supported Investigators[a] in Nonpreferred Research Areas	Faculty With Support Primarily in Area Different From Preferred Area of Research: Total Number	Total Percent	Relationship of Supported to Preferred Research Area: Percent in Different Field	Percent in Different Subfield	Percent in Different Specialty
Biochemistry	65	10	23	100.0	17.4	39.1	43.5
Biology	71	29	100	100.0	4.0	32.0	64.0
Botany	34	17	51	100.0	9.8	29.4	60.8
Chemical Engineering	66	28	53	100.0	11.3	56.6	32.1
Chemistry	114	57	152	100.0	7.9	36.8	55.3
Economics	77	31	89	100.0	3.4	44.9	51.7
Electrical Engineering	70	40	121	100.0	6.6	48.8	44.6
Geology	66	29	64	100.0	12.5	42.2	45.3
Mathematics	95	13	35	100.0	31.4	48.6	20.0
Microbiology	71	27	50	100.0	2.0	12.0	86.0
Mining & Mineral Engineering	15	6	14	100.0	0	71.4	28.6
Physics	104	35	89	100.0	11.2	41.6	47.2
Physiology	66	15	36	100.0	19.4	38.9	41.7
Psychology	99	35	76	100.0	3.9	43.4	52.6
Sociology	74	28	83	100.0	8.4	50.6	41.0
Zoology	36	14	42	100.0	0	21.4	78.6
All Fields	1,123	414	1,078	100.0	8.3	40.4	51.3

[a]Those spending at least 20 percent of time in research.

B. Departments Rated "Distinguished" and "Strong" in Roose-Andersen Study

Field	Number of Departments: With Externally Supported Faculty Investigators[b]	Number of Departments: With Externally Supported Investigators[b] in Nonpreferred Research Areas	Faculty With Support Primarily in Area Different From Preferred Area of Research: Total Number	Total Percent	Relationship of Supported to Preferred Research Area: Percent in Different Field	Percent in Different Subfield	Percent in Different Specialty
Biochemistry	16	2	8	100.0	0	12.5	87.5
Botany	11	3	16	100.0	12.5	18.8	68.8
Chemical Engineering	13	4	10	100.0	0	50.0	50.0
Chemistry	29	12	45	100.0	2.2	35.6	62.2
Economics	12	6	21	100.0	0	33.3	66.7
Electrical Engineering	13	7	26	100.0	7.7	42.3	50.0
Geology	15	5	10	100.0	0	50.0	50.0
Mathematics	21	2	14	100.0	28.6	50.0	21.4
Microbiology	17	6	15	100.0	0	6.7	93.3
Physics	22	7	15	100.0	6.7	46.7	46.7
Physiology	20	1	2	100.0	0	0	100.0
Psychology	23	4	8	100.0	0	50.0	50.0
Sociology	16	3	9	100.0	11.1	66.7	22.2
Zoology	11	2	6	100.0	0	0	100.0
All Fields[a]	239	64	205	100.0	5.4	35.6	59.0

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

[b]Those spending at least 20 percent of time in research.

Table 6

First-Ranked Factors Influencing Selection of Research Area Different from Preferred Area:
All Departments

(In Percentages)

Factors	Total Faculty (N=1,078)	Relationship of Supported to Preferred Research Area		
		Different Field (N=89)	Different Subfield (N=436)	Different Specialty (N=553)
The researcher selected area believed to have better chance for support	58	56	50	64
Funding organization suggested area of research to prospective researcher	13	19	16	11
Funding organization emphasized applied research	13	1	13	14
Faculty member was co-investigator on another faculty member's project	13	19	17	8
Lack of facilities or equipment	1	1	1	1
Administrative decision within institution	1	0	1	1
Other	2	3	3	1
None given	*	0	*	0
Total	100	100	100	100

* = <.5

Table 7

Predominant First-Ranked Factors Influencing Selection of Research Area Different From Preferred Area, by Relationship Category and Field

Field	Relationship of Supported to Preferred Research Area					
	Different Field		Different Subfield		Different Specialty	
	Number of Faculty	Percent Influenced by Factor	Number of Faculty	Percent Influenced by Factor	Number of Faculty	Percent Influenced by Factor
Biochemistry	4	75% B	9	44% A	10	70% C
Biology	4	75% A	32	41% A	64	77% A
Botany	5	100% A	15	53% C	31	32% A
Chemical Engineering	6	67% A	30	50% A	17	76% A
Chemistry	12	83% A	56	70% A	84	80% A
Economics	3	100% A	40	35% B	46	72% A
Electrical Engineering	8	63% A	59	61% A	54	56% A
Geology	8	38% A/D	27	33% A	29	79% A
Mathematics	11	55% A	17	76% A	7	71% A
Microbiology	1	100% A	6	50% A	43	72% A
Mining and Mineral Engineering	0	--	10	70% A	4	50% B
Physics	10	30% A	37	57% A	42	52% A
Physiology	7	71% A	14	79% A	15	33% A/C
Psychology	3	33% A/C	33	64% A	40	58% A
Sociology	7	57% D	42	36% C	34	41% A
Zoology	0	--	9	44% A	33	76% A
All Fields	89	56% A	436	50% A	553	64% A

Code	Factor
A	The researcher selected area believed better chance for support.
B	Funding organization suggested area of research to prospective researcher
C	Funding organization emphasized applied research
D	Faculty member was co-investigator on another faculty member's project.
E	Lack of facilities or equipment
F	Administrative decision within institutions
G	Other

Table 8

Relationship Between Supported and Preferred Research Area, by Factors Influencing Selection and Field:

All Departments

Field and Relationship of Supported to Preferred Research Area	Number of Departments	Number of Doctorate Faculty	Factors Influencing Selection of Research Area (see list of factors at end of table)
BIOCHEMISTRY			
Different field	2	4	1st ranked: 75% B 25% A 2nd ranked: 75% D 25% *
Different subfield	7	9	1st ranked: 44% A 33% D 11% B 11% C 2nd ranked: 44% A 33% B 11% C 11% *
Different specialty	5	10	1st ranked: 70% C 20% D 10% A 2nd ranked: 90% A 10% *
BIOLOGY			
Different field	4	4	1st ranked: 75% A 25% D 2nd ranked: 50% B 25% F 25% *
Different subfield	15	32	1st ranked: 41% A 22% C 19% D 13% B 3% E 3% G 2nd ranked: 44% A 19% C 13% D 12% * 9% G 3% B
Different specialty	22	64	1st ranked: 77% A 14% C 5% D 5% B 2nd ranked: 28% D 20% C 14% * 11% G 11% B 8% A 8% E
BOTANY			
Different field	2	5	1st ranked: 100% A 2nd ranked: 60% D 40% C
Different subfield	8	15	1st ranked: 53% C 27% A 20% B 2nd ranked: 47% B 27% C 27% D
Different specialty	14	31	1st ranked: 32% A 29% C 19% B 13% D 6% F 2nd ranked: 39% C 26% B 23% A 10% D 3% *
CHEMICAL ENGINEERING			
Different field	6	6	1st ranked: 67% A 33% B 2nd ranked: 33% D 33% * 17% A 17% C
Different subfield	21	30	1st ranked: 50% A 30%D 17% B 3% F 2nd ranked: 33% C 20%* 17% A 13% F 10% B 7% D
Different specialty	10	17	1st ranked: 76% A 12% D 12% E 2nd ranked: 47% B 24% D 12% A 12% * 6% C
CHEMISTRY			
Different field	5	12	1st ranked: 83% A 17% B 2nd ranked: 67% B 17% * 8% C 8% D
Different subfield	29	56	1st ranked: 70% A 13% B 13% D 5% C 2nd ranked: 41% * 36% C 13% B 5% A 5% D
Different specialty	37	34	1st ranked: 80% A 10% C 7% B 2% D 1% G 2nd ranked: 54% C 15% A 15% B 6% * 5% D 2% E 2% G
ECONOMICS			
Different field	2	3	1st ranked: 100% A 2nd ranked: 67% D 33% C
Different subfield	22	40	1st ranked: 35% B 28% D 18% A 10% G 5% F 3% C 3% * 2nd ranked: 23% A 23% D 20% * 18% C 15% B 3% F
Different specialty	17	46	1st ranked: 72% A 13% B 11% D 2% F 2% G 2nd ranked: 48% B 13% A 13% D 11% * 9% E 7% C

Table 8 - Continued

Relationship Between Supported and Preferred Research Area, by Factors Influencing Selection and Field:

All Departments

Field and Relationship of Supported to Preferred Research Area	Number of Departments	Number of Doctorate Faculty	Factors Influencing Selection of Research Area (see list of factors at end of table)
ELECTRICAL ENGINEERING			
Different field	6	8	1st ranked: 63% A 25% D 13% B 2nd ranked: 38% B 38% * 25% A
Different subfield	30	59	1st ranked: 61% A 22% D 8% B 7% C 2% G 2nd ranked: 27% A 25% D 22% B 12% * 10% C 3% E
Different specialty	23	54	1st ranked: 56% A 20% B 20% D 2% E 2% F 2nd ranked: 37% B 20% E 17% C 11% A 7% D 7% *
GEOLOGY			
Different field	5	8	1st ranked: 38% A 38% D 25% B 2nd ranked: 38% G 25% A 25% * 13% C
Different subfield	20	27	1st ranked: 33% A 26% B 15% C 15% D 7% E 4% G 2nd ranked: 26% D 22% C 19% B 15% E 11% * 4% A 4% G
Different specialty	18	29	1st ranked: 79% A 10% C 7% E 3% B 2nd ranked: 34% C 28% B 14% * 14% D 7% A 3% E
MATHEMATICS			
Different field	5	11	1st ranked: 55% A 27% B 18% D 2nd ranked: 45% C 27% A 27% *
Different subfield	8	17	1st ranked: 76% A 12% C 6% D 6% G 2nd ranked: 35% B 35% C 12% A 12% D 6% *
Different specialty	3	7	1st ranked: 71% A 29% D 2nd ranked: 43% B 29% A 29% *
MICROBIOLOGY			
Different field	1	1	1st ranked: 100% A 2nd ranked: 100% D
Different subfield	6	6	1st ranked: 50% A 33% B 17% C 2nd ranked: 33% A 33% C 17% B 17% D
Different specialty	21	43	1st ranked: 72% A 16% D 5% B 5% C 2% G 2nd ranked: 30% C 26% B 14% G 14% * 9% A 2% D 2% E 2% F
MINING AND MINERAL ENGINEERING			
Different field	0	0	1st ranked: 0 2nd ranked: 0
Different subfield	6	10	1st ranked: 70% A 20% D 10% B 2nd ranked: 30% B 30% D 20% * 10% A 10% C
Different specialty	3	4	1st ranked: 50% B 25% A 25% D 2nd ranked: 50% A 50% B
PHYSICS			
Different field	9	10	1st ranked: 30% A 20% B 20% D 20% G 10% E 2nd ranked: 50% C 20% A 10% D 10% E 10% *
Different subfield	22	37	1st ranked: 57% A 19% C 11% D 8% G 3% B 3% E 2nd ranked: 27% A 22% B 19% D 16% C 8% * 5% E 3% G
Different specialty	23	42	1st ranked: 52% A 38% C 10% B 2nd ranked: 31% A 26% C 21% D 12% B 5% * 2% E 2% F

Table 8 - Continued

Relationship Between Supported and Preferred Research Area, by Factors Influencing Selection and Field:

All Departments

Field and Relationship of Supported to Preferred Research Area	Number of Departments	Number of Doctorate Faculty	Factors Influencing Selection of Research Area (see list of factors at end of table)						
PHYSIOLOGY									
Different field	3	7	1st ranked: 71% A	29% D					
			2nd ranked: 71% B	29% A					
Different subfield	7	14	1st ranked: 79% A	14% D	7% C				
			2nd ranked: 43% C	36% G	14% B	7% E			
Different specialty	8	15	1st ranked: 33% A	33% C	27% F	7% D			
			2nd ranked: 33% A	27% D	20% C	20% *			
PSYCHOLOGY									
Different field	3	3	1st ranked: 33% A	33% C	33% D				
			2nd ranked: 67% A	33% B					
Different subfield	21	33	1st ranked: 64% A	21% B	12% D	3% C			
			2nd ranked: 24% *	21% B	21% C	21% D	6% E	3% G	3% A
Different specialty	22	40	1st ranked: 58% A	25% C	15% B	3% D			
			2nd ranked: 38% C	23% A	18% B	13% *	5% D	3% G	3% F
SOCIOLOGY									
Different field	4	7	1st ranked: 57% D	29% B	14% G				
			2nd ranked: 43% *	29% A	29% B				
Different subfield	19	42	1st ranked: 36% C	29% A	19% B	14% D	2% F		
			2nd ranked: 33% D	26% B	21% A	12% *	2% C	2% F	2% G
Different specialty	17	34	1st ranked: 41% A	26% B	18% D	15% C			
			2nd ranked: 38% C	29% D	15% A	9% F	6% B	3% *	
ZOOLOGY									
Different field	0	0	1st ranked: 0						
			2nd ranked: 0						
Different subfield	7	9	1st ranked: 44% A	33% B	11% C	11% D			
			2nd ranked: 33% B	33% E	11% C	11% F	11% *		
Different specialty	10	33	1st ranked: 76% A	12% B	12% C				
			2nd ranked: 64% C	18% A	9% B	9% D			

Code	Factor
A	- The researcher selected area believed better chance for support
B	- Funding organization suggested area of research to prospective researcher
C	- Funding organization emphasized applied research
D	- Faculty member was co-investigator on another faculty member's project
E	- Lack of facilities or equipment
F	- Administrative decision within institutions
G	- Other
*	- No factor cited for second rank

Appendixes

Appendix A: Survey Instrument

AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D. C. 20036

HIGHER EDUCATION PANEL

July 25, 1975

Dear Higher Education Panel Representative:

Enclosed is the twenty-ninth survey of the Higher Education Panel. Requested by the National Science Foundation, this survey concerns the degree of research involvement of science and engineering faculty and their ability to obtain research support in areas of their own choosing.

You will note that, instead of a single institutional response, replies are requested from heads of doctorate-level departments in selected science and engineering fields. (See General Instructions for a description of enclosed materials and the list of selected fields.) If your institution has a medical school, please include the appropriate doctorate-level departments within the medical school.

We realize that for some institutions there will be a number of individual departments to contact and that, in some instances, the department head may be out of town. In such cases the acting department head or the department's director of graduate studies should be asked to complete the questionnaire. Because time is a particularly critical factor in this survey, we ask that you not delay the return of your completed questionnaires past the due date even if this means that some departmental replies are missing.

The National Science Foundation has provided a letter addressed to department heads explaining the purpose of the survey, and this letter appears as the first page of the questionnaire. For your information, we are also enclosing a copy of the NSF report, Young and Senior Science and Engineering Faculty, 1974: Support, Research Participation, and Tenure (NSF 75-302). Copies have already been distributed to department heads who participated in the 1974 survey.

Please understand that your responses will be held in strictest confidence. As with all our reports, the data you provide will be reported in summary fashion only and will not be identified with your institution.

We would appreciate having the completed questionnaires returned to us by August 15, 1975. A self-addressed, stamped envelope has been enclosed for your convenience.

If you have any questions or problems with the survey, please do not hesitate to telephone us (collect) at (202) 833-4757.

Thank you again for your cooperation.

Sincerely,

Frank Atelsek

Frank Atelsek
Director

American Council on Education
Higher Education Panel Survey Number 29

Survey of Faculty Research: Level of Research Activity and Choice of Area

GENERAL INSTRUCTIONS

Enclosed in this package are the following materials:

1) Postcard - TO BE MAILED IMMEDIATELY: Please indicate which of the listed departments grant doctorate degrees.

2) Cover Sheet - TO ACCOMPANY COMPLETED QUESTIONNAIRES: Check the departments (1) for which completed questionnaires are being submitted and (2) for which completed questionnaires will be submitted later.

3) Multiple copies of the questionnaire, including the letter from NSF.

4) Prepaid, self-addressed return envelope.

5) NSF report (for information purposes only).

Please return completed questionnaires to the Higher Education Panel by August 15, 1975. Questionnaires completed after August 15 should be returned individually as soon as possible.

SELECTED SCIENCE AND ENGINEERING DEPARTMENTS

(If your institution has a medical school, please include the appropriate doctorate-level departments within the medical school)

Biochemistry - Include departments of biochemistry or biological chemistry.

Biology - Include only departments designated as biology or biological science. Do not include departments covering only specialized fields such as cellular biology or molecular biology.

Botany - Include departments of botany or botany combined with other subjects, e.g., department of botany and plant pathology.

Chemical Engineering

Chemistry

Economics - Do not include departments of agricultural economics.

Electrical Engineering

Geology - Include only departments designated as geology or geological science.

Mathematics - Do not include departments limited to applied mathematics, computer science, or statistics.

Microbiology - Include only departments designated as microbiology or bacteriology.

Mining and Mineral Engineering

Physics - Include only departments designated as physics or physics and astronomy. Do not include highly specialized departments such as molecular physics or electrophysics.

Physiology - Include departments of physiology or physiology combined with other subjects, e.g., department of physiology and biophysics.

Psychology - Do not include highly specialized departments or fields of education such as departments of child development, child studies, educational psychology, or counseling.

Sociology - Include departments designated as sociology or sociology and anthropology.

Zoology - Include departments of zoology or zoology combined with other subjects, e.g., department of zoology and entomology.

Return Postcard

PLEASE COMPLETE AND RETURN IMMEDIATELY

Dear Panel Representative:

Please check all of the following departments that grant doctorate degrees at your institution and return this postcard as soon as possible.

Thank you.

[ ] Biochemistry
[ ] Biology
[ ] Botany
[ ] Chemical Engineering

[ ] Chemistry
[ ] Economics
[ ] Electrical Engineering
[ ] Geology

[ ] Mathematics
[ ] Microbiology
[ ] Mining and Mineral Engineering
[ ] Physics

[ ] Physiology
[ ] Psychology
[ ] Sociology
[ ] Zoology

_____
Name of Institution

American Council on Education
Higher Education Panel Survey Number 29

A Survey of Faculty Research: Level of Research Activity and Choice of Area

COVER SHEET

Reports are requested only for departments granting the doctorate degree. Please cross out departments not granting doctorates in your institution, and make appropriate notations for reports submitted or to be submitted.

Department	Completed Survey Enclosed (Check)	Survey to be Submitted by: (Indicate date)
Biochemistry		
Biology		
Botany		
Chemical Engineering		
Chemistry		
Economics		
Electrical Engineering		
Geology		
Mathematics		
Microbiology		
Mining and Mineral Engineering		
Physics		
Physiology		
Psychology		
Sociology		
Zoology		

Name of Institution

Person to be called regarding departmental forms to be submitted at a later date

Phone Number

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

July 23, 1975

Dear Colleague:

A survey of faculty research activities conducted by the National Science Foundation in the spring of 1974 produced a number of important findings, some of which merit further study.*

For example, about forty-five percent of the science and engineering departmental chairmen surveyed indicated that their faculty investigators were generally unable to receive support in research areas of their own choosing. The degree of faculty research involvement and ability to obtain support for research areas of their own choosing are important factors in the health of scientific research. Additional insight could prove important to future policy developments. Thus, there is need now for additional information. To meet this need, we have asked the American Council on Education to conduct this fast-response survey through their Higher Education Panel. The Panel is a mechanism designed to obtain quickly a limited amount of information from a sample of institutions. We shall greatly appreciate your cooperation in completing the attached questionnaire at your earliest convenience. Because this is a sample survey we need to have as many replies as possible.

The American Council on Education will publish a report of survey findings, probably in the early fall. As in the case with all Higher Education Panel surveys, the confidentiality of the data you provide will be safeguarded. Only summary statistics in groupings large enough so that individual departments and institutions cannot be identified will be published.

We thank you for your cooperation.

Sincerely,

Charles E. Falk

Charles E. Falk
Director, Division of Science
Resources Studies

*Copies of the published survey report, Young and Senior Science and Engineering Faculty, 1974: Support, Research Participation, and Tenure, NSF 75-302, are available from my office.

OMB No. 99-0265. Exp. 6/76

American Council on Education
Higher Education Panel Survey Number 29

Survey of Faculty Research: Level of Research Activity and Choice of Area

NAME OF DEPARTMENT _____

1. Please indicate the number of full-time doctorate faculty in your department according to your estimate of the proportion of time they spent in research supported by all sources during the 12-month period ending June 30, 1975. (Include all aspects of research from supervision of research by graduate students to the preparation of research reports and publications.)

Estimated Portion of Time Spent in Research	Number of Full-Time Doctorate Faculty
a. Less than 20 percent	_____
b. At least 20 percent but less than one-third	_____
c. At least one-third but less than one-half	_____
d. One-half or more	_____
TOTAL (sum of above)	_____

2. Referring only to the full-time doctorate faculty in your department who spent 20 percent or more of their time in research (reported in Question 1b-d), how many had external separately budgeted research support?

Number of faculty _____

3. In your opinion, for how many of the faculty reported in Question 2 was this external support primarily for research in an area different from their preferred area of research? ("Preferred area of research" should be interpreted to mean the research area(s) a faculty member would choose to work in, if support were available.)

Number of faculty _____

4. For those faculty reported in Question 3, please indicate your opinion of the degree of relationship between the supported research area and the preferred research area by entering in the first column the number of faculty who you believe fit into each of the three relationship categories shown.

   Also, please indicate the two most important factors that, in your opinion, influenced these faculty to select research areas different from their preferred areas. (Recognizing that the factors listed below may not be the same for all faculty, please use your best judgment in selecting the most typical factors for each relationship category. Use code letters to indicate ranking of factors.)

Relationship of Supported Area to Preferred Area	Number of Full-Time Doctorate Faculty	Ranking of Factors Influencing Selection: First	Second
Different Field[1]	_____	_____	_____
Different Subfield but in Preferred Field[2]	_____	_____	_____
Different Specialty but in Preferred Field[3]	_____	_____	_____

To provide an unduplicated count of faculty in terms of the degree of relationship, please assign each faculty member to only one category based on your best judgment.

Code	Factor
A	The researcher selected area believed to have better chance for support
B	Funding organization suggested area of research to prospective researcher
C*	Emphasis on applied research by funding organization
D	Co-investigator on another faculty member's project
E	Lack of facilities and/or equipment
F	Administrative decision within your institution
G	Other, specify: _____

* Since this factor is inherent in A or B, please also cite one of them.

[1] Fields are major academic disciplines such as physics, chemical engineering, biology, mathematics, economics, etc.

[2] Subfields are major divisions of fields such as solid state physics, mass transfer, microbiology, modern analysis, international economics, etc.

[3] Specialties are divisions of subfields such as superconductivity, distillation, virology, operator theory, balance of payments, etc.

THANK YOU FOR YOUR ASSISTANCE. Please return this form by August 15, 1975

PLEASE RETAIN A COPY OF THIS SURVEY FOR YOUR RECORDS

TO: HIGHER EDUCATION PANEL
AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D.C. 20036

Any questions? Call (collect) (202) 833-4757.

Person Completing Form _____

Office _____

Phone _____

Appendix B: Response to the Survey

Of the 145 colleges and universities surveyed, 138 provided some departmental responses: 57 institutions provided responses for all eligible departments; 68 institutions, for 50 percent or more of the eligible departments; and 13 institutions, for fewer than 50 percent of the eligible departments.

Of the 1,385 departments surveyed, 1,149 (83 percent) provided usable data by the cutoff date for questionnaire returns (Table B-1). By field, however, the response rates varied considerably. Data were obtained from over 90 percent of the eligible chemistry and geology departments, for example, but from only 68 percent of the biochemistry and 73 percent of the botany departments. Higher-than-average response rates were recorded for the departments of sociology, chemical engineering, biology, physics, economics, psychology, and mathematics. Departments of zoology, microbiology, mining and mineral engineering, electrical engineering, and physiology had lower-than-average response rates.

Responses were received from 241 of the 292 sampled departments rated "distinguished" and "strong" in the Roose-Andersen study, for a response rate of 83 percent. For individual fields, the response rates ranged from 70 percent for biochemistry to 91 percent for mathematics and physiology.

Table B-1

Departmental Response to Survey #29
Faculty Research: Level of Activity and Choice of Area

Field	Number of Departments Sampled	Number of Respondents	Response Rate	Number of "Distinguished" and "Strong" Departments Sampled	Number of "Distinguished" and "Strong" Respondents	Response Rate
All Fields	1,385	1,149	83.0	292	241	82.5
Biochemistry	97	66	68.0*	23	16	69.6*
Biology	84	72	85.7	a	a	a
Botany	48	35	72.9*	15	11	73.3*
Chemical Engineering	79	68	86.1	16	13	81.3
Chemistry	126	114	90.5	33	29	87.9
Economics	94	80	85.1	16	12	75.0
Electrical Engineering	89	72	80.9	19	14	73.7*
Geology	73	66	90.4	17	15	88.2
Mathematics	121	102	84.3	23	21	91.3*
Microbiology	94	73	77.7	20	17	85.0
Mining and Mineral Engineering	19	15	78.9	a	a	a
Physics	124	106	85.5	26	23	88.5
Physiology	82	67	81.7	22	20	90.9*
Psychology	118	100	84.7	29	23	79.3
Sociology	89	77	86.5	19	16	84.2
Zoology	48	36	75.0	14	11	78.6

* Response rate exceeds or falls short of overall response rate by 10 percent.

[a]The Roose-Andersen study did not include biology departments as designated in the present study or departments of mining and mineral engineering.

Appendix C: List of Sampled Institutions

University of Alabama-University
University of Alaska-Fairbanks
American University
Arizona State University
University of Arizona
University of Arkansas-Main Campus
Auburn University-Main Campus

Boston College
Boston University
Brandeis University
Brown University

University of California-Berkeley
University of California-Davis
California Institute of Technology
University of California-Irvine
University of California-LA
University of California-Riverside
University of California Med Ctr-SF
University of California-Santa Barbara
University of California-Santa Cruz
Carnegie-Mellon University
Case Western Reserve University
Catholic University of America
University of Cincinnati-Main Campus
Clemson University
University of Colorado-Main Campus
Colorado School of Mines
Colorado State University
Columbia University-Main Division
Columbia University Teachers College
Cornell U. Endowed Colleges

Dartmouth College
University of Dayton
University of Delaware
University of Denver
Drexel University
Duke University

Emory University

Florida State University
University of Florida

Georgia Institute of Tech-Main Campus
George Peabody College for Teachers
George Washington University
Georgetown University
University of Georgia

Hahnemann Med Col. and Hosp.
Harvard University
University of Hawaii at Manoa
University of Houston-Main Campus
Howard University

University of Idaho
University of Illinois-Chicago Cir
University of Illinois-Urbana Campus
Illinois Institute of Technology
Indiana University at Bloomington
Iowa State U Sciences and Technology

Johns Hopkins University

Kansas State U Agr & Applied Sciences
University of Kentucky-Main Campus

Louisiana State University-Baton Rouge
Lehigh University
Loma Linda University
University of Louisville
Loyola University

University of Maine at Orono
University of Massachusetts-Amherst
University of Maryland-College Park
College of Medicine and Dentistry-Newark
Medical College of Georgia
Medical University of South Carolina
Medical College of Pennsylvania
University of Miami
University of Michigan-Ann Arbor
University of Minn-Mnpls St Paul
University of Mississippi-Main Campus
Mississippi State University
University of Missouri-Columbia
University of Missouri-Rolla
Montana State University
University of Montana

University of North Carolina-Chapel Hill
North Carolina State University-Raleigh
N Dakota State University-Main Campus
University of Nevada-Reno
University of New Hampshire
New York Medical College
New York University
University of New Mexico-Main Campus
New Mexico State University-Main Campus
Northeastern University
Northwestern University
University of Notre Dame

Ohio State University-Main Campus
Oklahoma State University-Main Campus
University of Oklahoma-Norman Campus
University of Oregon-Main Campus
Oregon State University

Pennsylvania State University-Main Campus
University of Pennsylvania

List of Sampled Institutions (Continued)

University of Pittsburgh-Main Campus
Polytechnic Institute of New York
Princeton University
Purdue University-Main Campus

Rensselaer Polytechnic Institute
University of Rhode Island
Rice University
University of Rochester
Rutgers University-New Brunswick

St. Louis University-Main Campus
University of South Carolina-Main Campus
South Dakota State University
University of South Florida
University of Southern California
Stanford University
Stevens Institute of Technology
SUNY Downstate Medical Center
SUNY State University Buffalo-Mn Campus
SUNY State University Stony Brk Main
SUNY State U at Albany
SUNY Upstate Medical Center
Syracuse University Main Campus

Temple University-Main Campus
University of Tennessee Knoxville
University of Texas at Austin-Main Campus
Texas A & M University-Main Campus
Texas Tech University
Tufts University
Tulane University of Louisiana

Utah State University
University of Utah

Virginia Polytechnic Institute & St. U
Vanderbilt University
Virginia Commonwealth University
University of Virginia-Main Campus
University of Vermont & St Agrl College

Washington State University
Washington University
University of Washington
Wayne State University
West Virginia University
University of Wisconsin-Madison
University of Wisconsin-Milwaukee
University of Wyoming

Yale University
Yeshiva University

Other Reports of the Higher Education Panel
American Council on Education

Blandford, B. and Dutton, D. **Survey of First-Year Graduate and Postdoctoral Enrollment in Science and Engineering.** Higher Education Panel Report, No. 1, August, 1971.

Blandford, B. and Dutton, D. **Research Support for Science Faculty.** Higher Education Panel Report, No. 2, November, 1971.

Astin, A., Blandford, B., and Mahn, T. **Freshman Class Vacancies in Fall 1971 and Recent Trends in Enrollment of Minority Freshmen.** Higher Education Panel Report, No. 3, February, 1972.

Changes in Graduate Programs in Science and Engineering 1970-72 and 1972-74. Science Resources Studies Highlights. Washington: National Science Foundation, July, 1972.

Blandford, B. and Sell, C. **Enrollment of Junior-Year Students (1970 and 1971).** Higher Education Panel Report, No. 5, April, 1972.

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Furniss, W. T. **Faculty Tenure and Contract Systems: Current Practice.** ACE Special Report, July, 1972.

Bayer, A. E. and Astin, A. W. **War Protest on U. S. Campuses During April 1972.** Higher Education Panel Report, No. 9, May, 1972.

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Dutton, J. E. **First-Year Enrollment for Masters or Higher Degrees, Fall 1973.** Higher Education Panel Report, No. 17, April, 1974.

El-Khawas, E. H. and Kinzer, J. L. **The Impact of Office of Education Student Assistance Programs, Fall 1973.** Higher Education Panel Report, No. 18, April, 1974.

El-Khawas, E. H. and Kinzer, J. L. **Enrollment of Minority Graduate Students at Ph.D. Granting Institutions.** Higher Education Panel Report, No. 19, August, 1974.

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El-Khawas, E. H. and Furniss, W. T. **Faculty Tenure and Contract Systems: 1972 and 1974.** Higher Education Panel Report, No. 22, December, 1974.

El-Khawas, E. H. and Kinzer, J. L. **A Survey of Continuing Education Opportunities Available to Nonacademic Scientists, Engineers and Mathematicians,** Higher Education Panel Report, No. 23, April, 1975.

Atelsek, Frank J. and Gomberg, Irene L. **Nonfederal Funding of Biomedical Research and Development: A Survey of Doctoral Institutions.** Higher Education Panel Report, No. 25, July 1975.

Atelsek, Frank J. and Gomberg, Irene L. **Student Assistance: Participants and Programs, 1974-75.** Higher Education Panel Report, No. 27, July 1975.

Single copies of the above reports may be obtained from the Higher Education Panel, American Council on Education, One Dupont Circle, Washington, D. C. 20036.